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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,478

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01/12/2005

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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT

PAPER NUMBER

2841

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/646,478

**Applicant(s)**

KAWAGOE, DAISUKE

**Examiner**

Ishwar (I. B.) Patel

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-13 and 19-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Attachment "A" &amp; "B"</u> .         |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-13, drawn to a method of forming via in a substrate, classified in class 29, subclass 846.
  - II. Claims 14-18, drawn to a substrate, classified in class 174, subclass 262.
  - III. Claims 19-21, drawn to a computer system, classified in class 361, subclass 783.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions group I and (II, III) are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by another and materially different process such as (a) dielectric layer with preformed holes can be used instead of forming the opening after placing them on the core layer, (b) the precut circuit pattern can be glued to the core layer, instead of plating a first conductive layer and then patterning the conductive layer, and similarly (c) the subsequent conductive pattern can be made by gluing the precut pattern on the respective dielectric layer, and (d) a copper laminate can be used instead of forming conductive layer on a dielectric layer.

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3. Inventions group III and II are related as combination and subcombination.

Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed such as, (a) the combination does not require the longitudinal axis of the first skip via being substantially aligned with the longitudinal axis of the second via and (b) the combination does not require the plurality of dielectric layers formed on a core. The subcombination has separate utility, such as can be used in communication system such as two-way radio or cellular telephones, pagers and similar electronic systems instead of computer system.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for the Groups (II, III), and the search required for group III is not required for group II, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Andrew Peret (Reg. 41,246) on December 29, 2004 a provisional election was made with traverse to prosecute the invention of group II, claims 14-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-13 and 19-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

### ***Drawings***

6. The drawings are objected to because the figures are improperly cross-hatched. All of the parts shown in section, and only those parts, must be cross-hatched. The cross-hatching patterns should be selected from those shown on page 600-114/115 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP § 608.02.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 14 and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Carpenter et al., US Patent No. 6,810,583.

**Regarding claim 14**, Carpenter et al., in one embodiment (as shown in figure 5), discloses substrate (94) comprising: a plurality of dielectric layers (71, 72, 73, 74); a first skip via (via V1, as shown on marked up figure 5 in attachment "A") extending through two of the dielectric layers (dielectric layers 71 and 72), and a second via (via V2, as shown on marked up figure 5 in attachment "A") extending through one of the dielectric layers (73), the second via and the first skip via being stacked on top of one another (V1 and V2 stacked on top of one another, see marked up figure 5 in attachment "A").

**Regarding claim 16**, Carpenter et al., further discloses the first skip via (V1) includes a longitudinal axis (axis passing through the via V1, as shown on marked up figure 5 in attachment "A") and the second via (V2) includes a longitudinal axis (axis passing through the via V2, as shown on marked up figure 5 in attachment "A"), the

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longitudinal axis of the first skip via being substantially aligned with the longitudinal axis of the second via (see marked up figure 5 in attachment "A").

**Regarding claim 17**, Carpenter et al., further discloses a third via (V3, as shown on marked up figure 5 in attachment "A") extending through at least one of the dielectric layers (74), the third via being stacked onto the first skip via (V1) and the second via (V2).

**Regarding claim 18**, Carpenter et al., further discloses the plurality of dielectric layers (71, 72, 73, 74) is formed on a core (10).

9. Claims 14 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Carpenter et al., US Patent No. 6,810,583.

**Regarding claim 14**, Carpenter et al., in one embodiment (as shown in figure 6), discloses substrate (96) comprising: a plurality of dielectric layers (143,141,15,13,41,43); a first skip via (via V4, as shown on marked up figure 6 in attachment "B") extending through two of the dielectric layers (dielectric layers 143 and 141), and a second via (via V5 or V6 as shown on marked up figure 6 in attachment "B") extending through one of the dielectric layers (15 or 41), the second via and the first skip via being stacked on top of one another (V4 and V5 and V6 stacked on top of one another, see marked up figure 6 in attachment "B").

**Regarding claim 15**, Carpenter et al., further discloses the second via (via V5 or V6, as shown on marked up figure 6 in attachment "B") is a second skip via extending through two of the dielectric layers (15 and 13 or 41 and 43).

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bindra et al., US Patent No. 5,129,142 discloses a laminate structure with vias stacked one above the other, see figure 3D.

Maezawa et al., US Patent No. 6,630,630, discloses a multilayer printed wiring board with stacked via, see figure 1(d).

Fuller, Jr. et al., US Patent No. 6,809,269, discloses a substrate with vias passing through the multiple dielectric layers, see figure 2.

Curcio et al., US Patent No. 6,504,111 discloses a structure with stacked via, see figure 7, each via passing through two dielectric layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272 1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ishwar (I. B.) Patel  
Examiner  
Art Unit: 2841  
January 6, 2005